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A Weekly Journal Devoted to Industrial and Engineering Chemistry

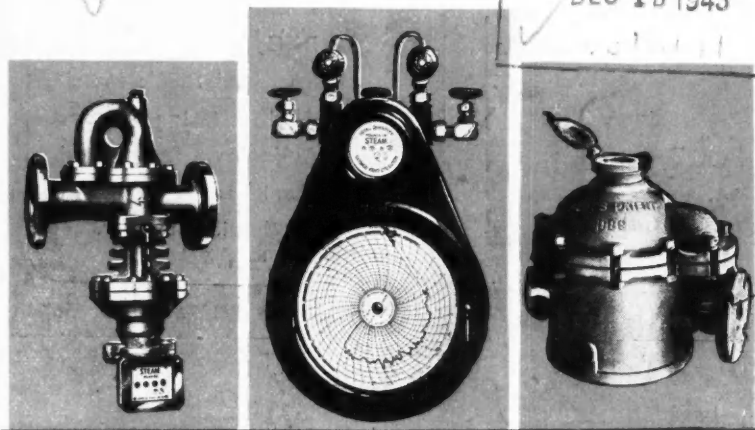
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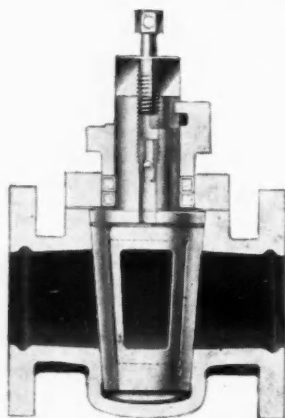
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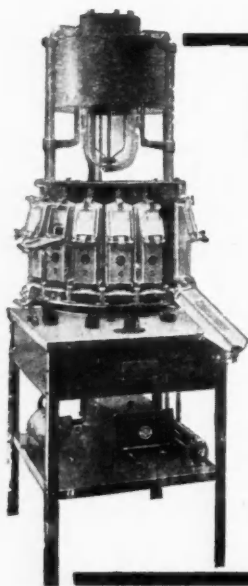
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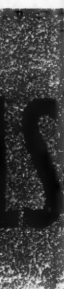
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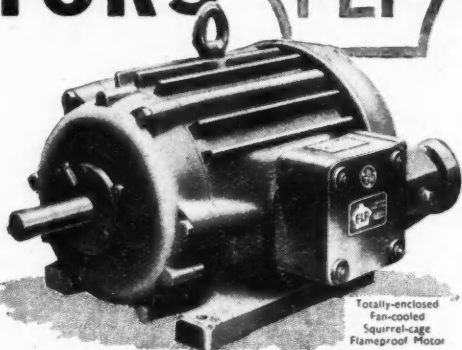
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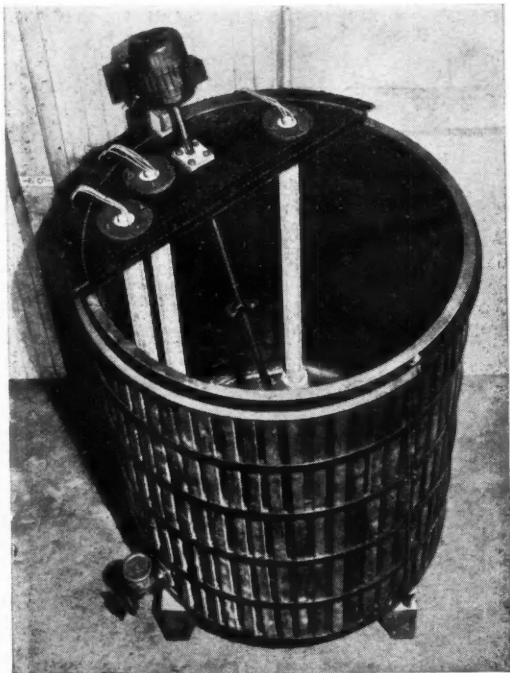


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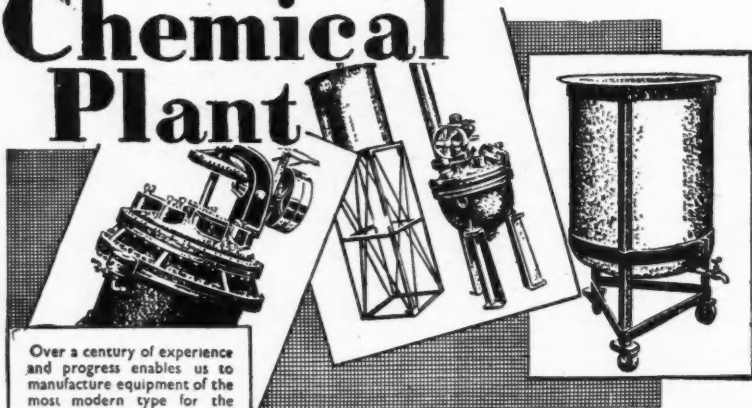
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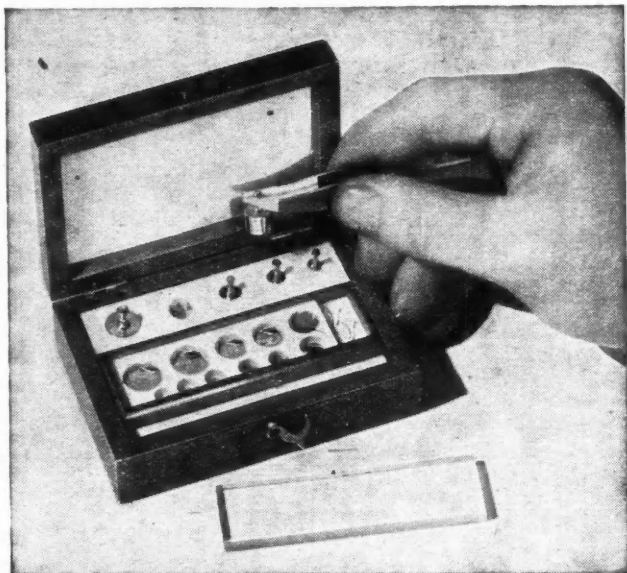


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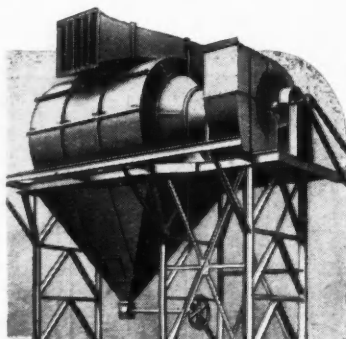
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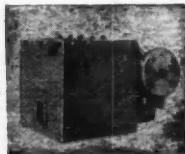
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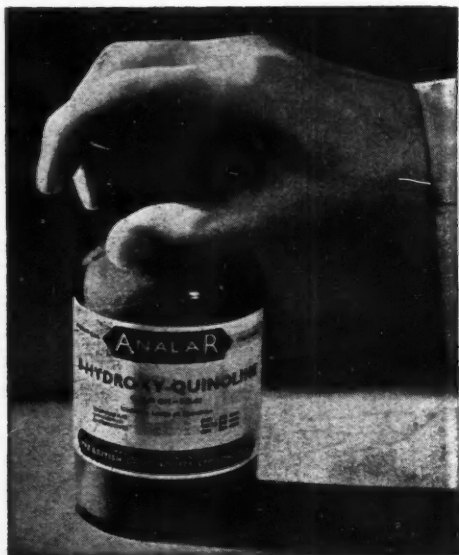
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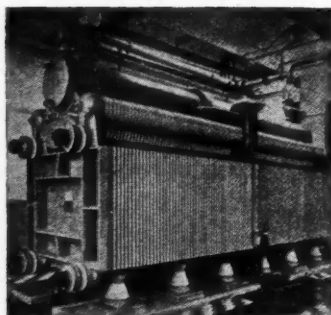


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Post-War Controls

POST-WAR control is a subject on which the Government and the nation do not see eye to eye. Industry's reaction to controls was very well summed up by Colonel Bristow, chairman of Low Temperature Carbonisation, Ltd., in his annual address to his shareholders: "We must have sound national planning with as little control as possible." Certain members of the Government, however (and we cannot bring ourselves to believe that the Prime Minister shares these sentiments), think quite otherwise. They have the nation under their control so that most of us can move neither hand nor foot without official permission, and they do not intend to relax that control if it is humanly possible to maintain it. The technique of the dictator is evident, and it may need another Charlie Chaplin to expose it.

Here, for example, is Mr. Herbert Morrison speaking at Dundee, and solemnly warning us that what we as a nation need to understand is that only by allowing him to control us for our own good can dire disaster be averted. "If we are to avoid social and economic catastrophe after the war we must continue this (presumably, the present existing) system of control, subject *maybe* to suitable

and sensible modifications, for as long as abnormal conditions exist." The italics are ours. Since abnormal conditions will obviously exist until controls are lifted, the merry-go-round seems likely to outlast the lifetime of this generation. It appears that the Government of 1918 knew quite well that control was necessary for the nation's own good, but the wicked Press and the business men made such a fuss that the Government gave way, and the result was the great trade depressions of the 1920's. The control which the Government had learnt how to impose during 1914-18—control that was nothing like so drastic as in 1943—was thrown away "not out of sheer light-hearted inexperience," but because "the business community was longing to get back to 1914," and because of "a raging,

tearing Press campaign which echoed and amplified the utterances of business men." We will not repeat the accusations levelled by one who is supposed to be a responsible Minister of the Crown against the Press and the business community, but we will assure Mr. Morrison that this country, having fought to preserve the freedom of the world, will not lightly throw away its own freedom. The Britisher is impatient of dictation

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and has a peculiarly short way with dictators. The Press and the business world alike are anxious that this country should lead the world in industry and the arts of peace. We have our own ways of doing this, and we know what we must rely on to achieve our objects. It is the business of the Government to create the political and economic background necessary to allow us to pick up the threads again, and to plan where planning is necessary. Planning will be necessary to encourage our home industries, in rebuilding our cities, to cut out the cheap and nasty, to utilise our coal to the best advantage, to abolish smoke, to encourage research and technical development, to educate our people, and in a hundred other ways. This planning must, however, be based on democratic methods, and must be by consent, not by "control."

Having said this, it is well to preserve an open mind and to inquire just how far "controls" are likely to be necessary. We do not suppose anyone would seriously suggest that on the day following the signing of an armistice, every war measure should be immediately relaxed. There are problems of demobilisation to be faced. Starving Europe must be fed, and we must clearly continue to tighten our belts awhile till the available food has been distributed. Likewise, it is not to be supposed that a horde of jerry-builders could be allowed to work their will upon our cities and towns. There must be standards of technical performance for the stoves, and cookers, and furniture, and all the other furnishings required for housing. Those could be supplied by the British Standards Institution and legalised by Parliament, without any bureaucratic control. To that sort of control we have no objection; British industry had already started to apply it to itself long before the war. There must also be some order of priority in undertaking work. Which should come first—rebuilding Britain, or re-equipping Europe? That is a Government question. To what extent should the re-equipping of Europe be done by us and to what extent by America? How far should we re-equip Europe before letting the nations undertake their own reconstruction and so put themselves to work? In our own country, how far should we develop our own

manufactures and how far should we resume buying from abroad? That is a fiscal question and in some way, such as by taxation on imports, the Government can usefully give us a lead. No doubt world trade must be set going by international agreements; provided that industry is asked to advise on whatever steps are taken, this, again, is a problem of Government.

It will thus be seen that there are many ways in which Government must advise and direct industry in the two or three years immediately following the signing of an armistice. These are, however, very different from Government control through the Civil Service. We suspect that in putting forward "control" as the panacea, Mr. Morrison may have plans for the nationalisation of industry, and other Labour Party ideas. We read this into a particularly purple passage of his speech: "We shall have won this war by a system of fair shares—which means control; by a system of finding what we needed wherever we could get it—which means control; by a system of allotting our resources to the most urgent need on a basis of first things first—which means control. All these things will be needed after the war." We do not question that some of the things mentioned by Mr. Morrison will be needed after the war, but it is not necessary to retain Government control to get them. Trade Associations can interpret Government plans and industry can best be controlled through industry. Industrialists are neither children nor fools, that they should be placed under control. The comment of one of our daily newspapers sums up the position well: "The millions of Britain can fight a war and win it, but when it comes to deciding their own future, Mr. Morrison thinks they need a nursemaid—and a very strict nursemaid at that—who will stand no nonsense. He is mistaken. In spite of his despair about their mental powers, the public make up their minds for themselves. They are as little likely to accept the dictation of Mr. Morrison's bogeys as they are to accept the dictation of Mr. Morrison himself." Industry can do whatever control is necessary in its own sphere. For the rest it would appear that one of the most pressing needs of reconstruction will be a General Election.

NOTES AND COMMENTS

Extending Research Facilities

IT is interesting to have our suspicions confirmed, by no less an authority than Mr. Geoffrey Howard, chairman of Howard & Sons, Ltd., that the authorities frown upon applications for permits to construct and expand research laboratories for the chemical in engineering industries. It is easy enough to say glibly that every man shall have a job after the war; but it is less easy to ensure the existence of such jobs. Not only will there be the returning forces to consider, but also those whose loyal service to industry during the war surely merits more than a cavalier dismissal. To avoid gross injustice to both categories, some steps should surely be taken now towards providing wider opportunity for employment. Industrial chemical research has already done noble service towards this end, and all will agree that our research workers possess the ability, provided that they have the scope, to confer even more benefits of the same kind. The objection may be raised that we are too ready to think of the war as drawing to a close, whereas, as the Prime Minister has recently averred, probably the hardest and bloodiest campaigns lie ahead. The answer is simple: it may be neither advisable nor practicable to institute actual constructional work at the moment, but that does not justify the grandmotherly attitude too often adopted by officials towards those who are genuinely striving to avoid the social and economic disgraces that followed the last war. It is not enough to tell them: "We are too busy to attend to you; run away and play!"

Synthetic Nitrogen for India?

ALTHOUGH very far from being wholehearted supporters of that cult of composts which is receiving so much publicity to-day, we had always thought that in India at any rate the Indore process, which, in effect, is based on a scorn for artificial fertilisers, was a success. Now, however, having read a recent leading article in *Science and Culture*, a journal that represents the views of India's men of science, we are not so sure; it appears that the case for composting in India has been overstated.

The article points to manure as a factor of immediate importance in the famine situation, and claims that the Government has laid too much emphasis on farmyard manure and compost at the expense of synthetic nitrogen fertilisers. It estimates that, for proper manuring, India's impoverished soil "would require at least 50 lakhs of tons of ammonium sulphate annually," whereas the present yearly consumption is hardly a single lakh of tons. An urgent necessity, it is stated, is that synthetic ammonia plants should be imported into India and put into operation. Mysore is already running a small plant, and it appears that there should be no great difficulty in running much larger plants. A liberal use of synthetic nitrogen fertilisers would at all events be unlikely to produce results more detrimental than those of the present system; and there is something to be said for establishing an industry that might well be of permanent value.

Gramicidin

THE great attention paid to the development of penicillin as a bacteriostatic agent has led to the overshadowing of similar agents obtained from other fungi—almost to the point of eclipse. Interest in these other therapeutic agents will doubtless be resuscitated with the news that a relatively large quantity of gramicidin—to be precise, four and a half pounds, worth £20,000—has been sent from America to the Institute for Preventive Medicine in Russia. Gramicidin, it is claimed, holds great promise for the treatment of wounds, although it is regarded as inferior to penicillin, since it is much more poisonous and cannot be applied internally. Experiments with gramicidin are being made in this country; we record that point to prevent the misconception from arising that here is America exploiting a new discovery while British scientists are doing nothing at all about it. Scientific literature reveals that several other bacteriostatic agents of fungal origin exist; for example, tyrocidin, actinomycin, citrinin, streptothricin, gliotoxin, and proactinomycin: altogether a profitable field for experimentation, and one which supports us in

our view that every encouragement must be given to microbiological research.

The Mould for Colds ?

SINCE the last note was written another bacteriostatic agent derived from a mould has appeared on the scenes to the accompaniment of a great fanfare of Fleet Street trumpets that made the original and detailed announcement in *The Lancet* almost inaudible. The new drug is called patulin, after the specific name—*Penicillium patulum*—of the fungus which produces it. Its discovery is credited to Professor Harold Raistrick and his co-workers at the London School of Hygiene and Tropical Medicine. Pure patulin has already been obtained, and proves to be a colourless crystalline substance with a melting point of 111°C . and an empirical formula of $\text{C}_7\text{H}_6\text{O}_4$. Its structure probably corresponds to anhydro-3-hydroxymethylene-tetrahydro- γ pyrone-2-carboxylic acid. As a prospective cure for colds it offers great promise, but it will not be released for general use until its efficacy has been checked by further large-scale trials. The material for these tests is being supplied by the Therapeutic Research Corporation under the brand name of "Tercinin."

A B.A.C. Compromise

IT seems that a way has been found out of the deadlock that has long been paralysing the activities of the London section of the British Association of Chemists. The matters at issue having caused feelings to run sufficiently high for a writ to be served and an injunction sought, the Council rightly considered that it was time to intervene between the parties in dispute. Happily, the compromise outlined in the Council's decision has been accepted by all parties, and members will now be able to vote for a new London Section committee. The annual meeting of the section, which had been adjourned until something could be resolved on, is to be continued on December 4. Whatever the outcome, it must be the hope of all who wish well to the British chemical industry that the decision of the members will be abided by loyally, with the recognition that a vote by ballot is the truly democratic method of resolving such problems. Such publicity as there has already been

in the lay Press has been reasonably friendly, but it is not a good thing that too much attention should be drawn to affairs of this kind; and we are not alone in our hope that the matter will now be settled for once and for all. Here, in fact, is an opportunity for the rank and file of the industry to express a definite opinion. It is essential that the meeting should be representative, as we feel sure that if ordinary members had given the affairs of the Association the attention they deserve, despite the difficulties of war-time attendance, the uncomfortable state of affairs now existing would never have come into being; and it is in the members' best interests that it should not be allowed to continue.

Consumer Control

ON a later page we reproduce a few brief extracts from a speech made by Col. Devereux, International Alloys' chairman, on the degree and nature of planning which he considers desirable for the proper development of the coal industry in South Wales. We are quite firmly with him in the contention that reasonable planning and central control *à la* Morrison are by no means synonymous. Indeed, we are prepared to maintain that in some respects they are diametrically opposed; for the former can bring new life to an industry, whereas the latter is only too likely to degenerate into paralysis. We must all be perfectly clear, however, as to the methods by which reasonable planning can be achieved. Col. Devereux cites the coal industry, and rightly, as one which is the concern of *all* industry, and he is, unfortunately, also correct when he stigmatises it as the only major industry that has not increased its output in war time. Coal, indeed, must no longer be regarded as merely a fuel; it is, for example, a raw material for a young and flourishing branch of the chemical industry, and the chemical industry, as consumers of coal, should have the right of intervention in the conduct of the coal industry. Consumers' rights in the control of any given industry have been too long allowed to remain in the shadow; now is a grand opportunity to state them boldly, and to uphold the justice of their claim to full consideration in any inter-industrial planning scheme.

Polish Industries To-day

Germany's "Second Ruhr" Policy

IN their endeavours to compensate for the destruction which the British and American Air Forces are carrying to industries inside the Fatherland, the Germans have turned not only to Austria and Czechoslovakia—accounts of German exploitation of the industrial capacities of these two countries were given in *THE CHEMICAL AGE*, 1943, 49, pp. 63, 330—but also to Poland. Their exertions here are particularly centred upon Upper Silesia which, being already an industrial area of first-rate importance, was ripe for development and expansion. After the incorporation into the Reich of Austria, with 33 per cent. of the "occupied" population engaged in industry, of the highly industrialised Sudetenland, of Luxembourg with its large steel works, and of Alsace-Lorraine with its mines and industries, came the absorption of almost the whole of Polish industry, which includes the coal and heavy industries of Upper Silesia, the chemical and textile industries of Lodz, and her oil fields.

Economic Partition

At the beginning of the war, Poland's industrial development, which was particularly rapid in the years immediately preceding 1939, was violently interrupted and disorganised. With Poland's military defeat many of her industries became idle; they were deprived of raw materials, and their machinery was either carried away to Germany or scrapped altogether. Germany did not immediately make the best use of Poland's mines and industries for her own purposes, but when Germany did turn to exploit this industrial reserve she laid hold of Poland's economic life with a grip even more brutal and ruthless than that to which other European countries were to be subjected. It became the German policy to destroy the Polish nation in order to leave the way clear for German expansion eastwards. The western and northern provinces of Poland were incorporated in the Reich, while the rest of the country was separately administered under the "General Government." In the incorporated areas the Germans left the existing production machinery undisturbed, it being their aim to exploit the natural riches of these areas as rationally and as completely as possible. The economic structure of these regions was grafted on to the Reich economy, and merged with it. The Germans decided that these areas should be given the same diligent care as industrial areas in the Reich itself, in order to encourage German settlers. On the other hand, the area under the General Government, comprising the eastern and south-

ern territories, was to be completely de-industrialised, and to be turned into areas supplying the agricultural and raw material needs of the Reich. The disintegration of Poland's geographical and economic unity that followed can now be illustrated by numerous examples. Before the war Upper Silesia had never gravitated towards Germany, since it came into competition with the older and better-situated Ruhr industry; it constituted an important centre of mining and heavy industries for Polish markets and for the markets of adjacent countries. To-day, the Polish manufacturing centre of Lodz is incorporated within the Reich and is separated from the rest of Poland. The Warsaw industrial region, which drew its coal supplies from the Silesian and Dombrowa coalfields, is now cut off from them. The same applies to the central industrial region which depends for part of its fuel on natural gas extracted in Eastern Malopolska (the former Carpathian Galicia), with which it was linked up by a pipeline. Furthermore, it should not be overlooked that the country is now intersected by new frontiers and is broken up into smaller areas involving the ruin of numerous industrial, commercial, financial, and other organisations which formerly operated over all Poland.

Greater Upper Silesia

Germany's plan is the aggregation into one homogeneous administrative area of the maximum amount of coal, iron and technical resources which, during the past century, have been under the control of several separate countries. The first steps taken in Upper Silesia and the other Polish areas which were later incorporated with the "Gau Oberschlesien," namely, the Dombrowa and Cracow coalfields, and the Karwin region, were directed towards the most rapid and complete exploitation for German war production. After a few months of German economy, by bringing unprofitable mines into production and increasing the exploitation of labour, the coal output rose by 20 per cent. During the first year of German occupation, Upper Silesia produced over 82 million tons of coal. New machinery was introduced in coal mines throughout the area; the introduction of a piece of machinery called the "Panzer-Johanna" saved 25 to 30 shifts for every hundred tons of coal brought up. The German press boasted that whereas formerly 35 per cent. of the labour costs went on coal extraction, 45 per cent. on freightage and 20 per cent. in mine repairs, reforms had changed the ratio to 50 : 30 : 20. The Germans also an-

nounced that the target of 100 million tons a year had been reached.

So far as iron production was concerned, German figures provided for increasing production in Upper Silesia to 1,800,000 tons of pig iron and 3,000,000 tons of steel. Moreover, the annexation of Poland had given them five tube-welding works with a monthly potential production of 5500 tons, seven rolling-mills with a monthly potential output of 12,000 tons, nine sheet-iron rolling mills, seventeen fine wire-drawing mills capable of producing 60,000 tons monthly, and eight mills for medium wire with a potential production of 35,000 tons monthly. There is as yet no information to indicate how far the Germans have succeeded in achieving their far-reaching plans for pig-

panies in Upper Silesia, by means of which the Germans were enabled to achieve the desired end of "industrial concentration and rationalisation" of this area.

According to official Polish statistics, Poland had at the outbreak of war 60 collieries (mainly between Silesia and Cracow), 854 petroleum fields (the main districts were Drohobycz, Jasł, and Stanisławow in the Carpathians), 26 iron mines, four zinc and lead mines, 23 iron foundries, 10 zinc and lead foundries, and a number of very modern works in the chemical, electrochemical, metallurgical, and textile industry. The number of chemical plants operating in 1938 was 992, and these employed 55,000 workers. German capital thus had a wide field for "buying" sequestered Polish establish-



General view of the oilfield of Boryslaw in the Carpathian foothills.

iron and steel production and how far they are exploiting the potential production of the mills mentioned.

The German State monopoly, the Reichswerk Hermann Goering A.G., annexed all the largest coal and metallurgical industrial works. An organisation called the Bergwerksverwaltung Oberschlesien G.m.b.H. was set up, and mines and works were sequestered from their rightful owners. Another State concern, the Preussische Bergwerks und Hütten A.G. (known more briefly as Preussag) took over some other coal and iron units, while the I. G. Farbenindustrie also received its share of the loot. Just as these "purchases" of coal and iron industries were, in fact, purely fictitious transactions, the transfer of other Polish industries that the Germans considered essential for their war machine was made with complete disregard for the property rights of the various owners. New holding companies were formed which proceeded to "buy" and "sell" factories to which they never at any time had so much as a shadow of a legal claim; by juggling with the native industries, they established great new com-

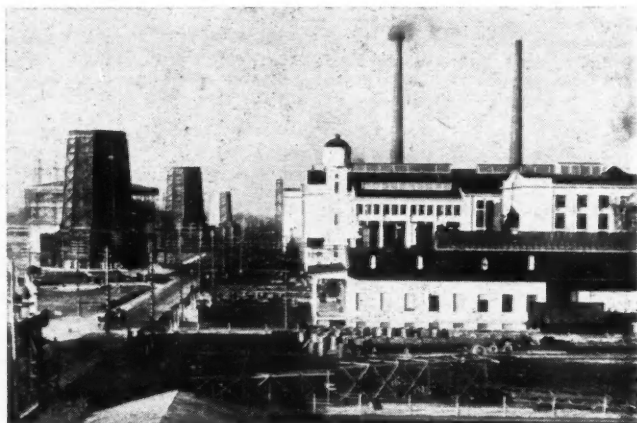
ments from new "trust-companies" such as the Haupttreuhandsstelle-Ost—the Chief Trustee Office for the East. In effect, the industrial "new order" in Upper Silesia rests, so far as coal and iron are concerned, on those two pillars of the German State, the Hermann Goering Werke and the Preussag. But the various industrial magnates also received their share; in metallurgy, for example, the Balleström concern gained control of most of the plants. A German consortium controlled by the Böhmisches Union Bank, which in its turn was strictly dependent upon the Berlin Deutsche Bank, bought up all the shares held by the French metallurgical firm of Schneider-Creusot in the Trzyniec-Karwina company; thus a new German industrial centre in Upper Silesia arose from the Spółka Gornicza i Hutnicza (Berg und Hüttenwerks Gesellschaft), which before 1919 was an Austrian company, and which became divided in 1939 into two companies as a result of Polish-Czechoslovak territorial changes. This new concern comprises more than six foundries, the largest of which are the Trzyniec works. The head office at

Cieszyn has been turned into a holding company, covering 14 different companies, each being given a new German name.

In the zinc industry the new economic relationships are less clearly defined, owing

and its subsidiary Schlesische Bergwerk und Hütten A.G. (Schlesag), and to the Giesche group. Schlesag received the Helen and Brzeszowice mines, S.A.G. secured the zinc roasting and smelting works

The Moscice Chemical Works, one of the largest nitrate plants in Europe, constructed in 1927.

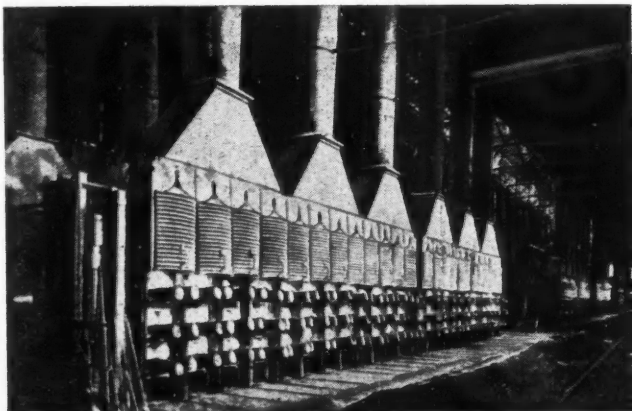


to the position which was held in this sphere by the American holding company, the Silesian American Corporation, belonging to the Harriman group, and owning before the war the whole of the Polish enterprises of the Giesche firm and 51 per cent. of that firm's enterprises on the German side of Upper Silesia. This company is at present in the hands of a German commissar. On the other hand, the works of the Hohenlohe firm, whose owner was not an Aryan, have been assigned to two concerns, the Schlesische A.G. für Bergbau und Zinkhüttenbetrieb (known as S.A.G.) at Lipiny,

in the Laura foundry and the Hohenlohe zinc works, while Giesche received the zinc field at Szarlej near Bytom (Beuthen). Finally, the Christian Kraft zinc-works and the Hohenlohe zinc rolling mill were formed into a limited liability company owned jointly by S.A.G. and Schlesag.

Other enterprises have been similarly reorganised, although on a smaller scale. For instance, the Berlin Vereinigte Industriewerke A.G. (Viag) has formed the Oberschlesische Stickstoffwerke A.G. at Krolewska Huta, and has "bought" the great artificial-fertiliser works at Chorzow. The

Furnaces in an Upper Silesian zinc foundry.



Oberschlesische Sprengstoffwerke G.m.b.H., with a capital of six million RM. has been formed by the Ballestrem, Borsig, Donnersmark, Giesche, and Goering Werke companies, in association with the Dynamit A.G. and the Westfälisch-Anhaltische Sprengstoff A.G. This commercial combination has taken over the explosives works at Laziska-Gorne. The Berlin Natronag has taken over the establishments of the same name in Upper Silesia. The chemical works at Bogumin, which belonged to the Solvay concern, have been taken over by another group of German "industrialists."

The Textile Industry

Lodz, the Polish Manchester, which has been renamed Litzmannstadt by the Germans, is the most important centre of the Polish textile industry. The necessity for Poland to become independent of German supplies had led to the emergence in Lodz of chemical and metallurgical works ancillary to the textile industry. When the German troops marched into Lodz in September, 1939, there were some 3500 textile mills of various kinds in active operation, with 2,200,000 spindles, 3500 looms, and approximately 150,000 workers. These were soon brought to a standstill, owing to the loss of raw material, which was carried off to Germany. Unlike the Reich textile industry, Lodz did not work on ersatz materials. The only exception to this was artificial silk, produced at Tomaszow and in the Chodakow factory near Sochoczew. When Russia entered the war conditions in this area changed. Attempts had to be made to find sources of substitute raw materials for this industry in order to restart and develop the manufacture of cellulose and other synthetics, while the production of fibres from flax and hemp straw was also expanded, and at a later stage even the straw of oilseed plants was used. To encourage this branch of industry the Bastfaser Aufbereitung Ost G.m.b.H. was founded in Lodz. The Zellgarn A.G. works for the production of synthetic fibres also supplies the Lodz textile industry. To support Germany's production of ersatz materials the Polish forests have been savagely exploited; even the weaker pine saplings, which are quite unsuitable for cutting, are undergoing destruction by being notched for resin production, and under the German direction the State and private forests in Poland have produced 5,000,000 kg. of resin in one year for use in the manufacture of ammunition, soap, and paper.

The question arises: How are all these changes to be regarded from the post-war aspect? The effective answer to this question can only be given after Germany's defeat by the Allies. When Germany has been defeated in the field this industrial "New Order" will come to an end. The German

conception of European autarky will be destroyed, and to this end the liquidation of German domination over the whole of Upper Silesia and Poland is an indispensable condition.

POLAND'S INDUSTRIAL OUTPUT IN 1938 PRODUCTION IN 1000 TONS

Coke	2328.2
Benzene (refined)	21.6
Rayon yarn	6.5
Calcium nitrate	56.7
"Azotniak" fertilizer	68.1
Superphosphates	163.4
Sulphuric acid (50% Be.)	288.7
Soda	129.9
Vegetable oils	35.9
Soaps	55.6
Petrol	129.6
Kerosene	144.4
Lubricating oils	45.6
Paraffin oils	23.9
Wood-pulp	80.5
Cellulose	93.0
Fireclay and bricks	124.4
Portland cement	1289.1
Lime	769.4
Pig iron	720.2
Steel	1467.9
Raw cast iron	205.2

SWEDISH PULP PRODUCTS

"Cellulux" and "Cellugel," two new products of Swedish wood-pulp research, have been evolved at the Svartvik chemical pulp mill of the Swedish Pulp Company, where a special factory has been built for their production. The estimated output is about 400 tons per annum, which, considering their strong coagulative capacity, is a very large quantity. "Cellulux" is a substitute for methyl cellulose and ethyl cellulose which were formerly imported. The material is supplied in the form of a lumpy powder which is used for preparing pastes and sizes, for starching and paperbanging, and in the textile industry. It is apparently a very "filling" material inasmuch as a 2 per cent. solution in water gives about the same consistency as molasses, a 3 per cent. solution the same as butter, while a 6 per cent. mixture produces a firm jelly. It has strong adhesive properties, is almost colourless, tasteless and odourless, and the solutions can last any length of time without turning acid or rancid. On the strength of these latter properties, the producers are converting the product into another material they call "Cellugel," which does not glue but binds a number of different substances, among them sugar. When this product is sweetened and flavoured it can be used for all kinds of confectionery, and it will very probably be used for cosmetics on a considerable scale.

Exports of chemicals, oils, and paints from Argentina in the first eight months of 1943 were almost 7,000,000 pesos higher in value than in the corresponding period of 1942.

Emulsion Polymerisation

Increasing Use of Soaps

IN many industrial fields there has been in recent years a remarkable increase in the amount of soap used in emulsion polymerisation. It is estimated, for example, that in the manufacture of Buna rubber no less than 50,000 tons of soap will be needed in the U.S.A. when the complete rubber programme is in full swing. In the plastics, textile, and other industries, the use of soap for this purpose is rapidly extending, especially in the first-named, where a great variety of polymeric and high-molecular-weight substances are used. These are emulsified in soapy water with or without catalysts, and thus the desired polymerisation is achieved in the form of an aqueous dispersion. In *Modern Plastics* (U.S.A.) for October an interesting review of recent innovations in this wide field is given. Among the general advantages claimed are better quality of product and greater rapidity of working.

It is probably in the plastics and paint industries that the method is most widely applicable; but resin dispersions are being increasingly used also in the manufacture of textiles; leather, paper, and polish. This can be achieved without change of equipment, and often without heating, and very even coatings of all degrees of imperviousness are obtained. In the case of textiles good penetration of the fibres to give adherent finishes is secured. Dispersion resin paints are said to have revolutionised the paint industry, but whether this is tending towards hyperbole or not there is no doubt that, after the war, these paints have a promising future before them. In the boot and shoe industry the new resin emulsion rubber latex extenders are used as leather cements and for paper impregnation. These and other large industries are using suspensions of plastics or synthetic resins in water stabilised with soap.

Methods of Preparation

Many of these consist simply of a suitable resin in a soap solution with or without modifying chemicals. Others have the plastic dissolved in an organic solvent and then dispersed in soap and water. In a British patent going as far back as 1931 (No. 349,988), by I.C.I., mention is made of an aqueous glyptal paint with the resin dissolved in a solvent such as naphtha and then emulsified in soapy water in a colloid mill; and a year earlier, in B.P. 334,567, a method is described for preparing a similar type of suspension for lacquers, wherein a suitable cellulose derivative is dissolved in butanol or other solvent and emulsified in soap solution.

Several recent U.S. patents have devel-

oped these older methods somewhat further. W. Daniel and another, in U.S.P. 2,296,427, claim an emulsifying method for polyisobutylene, natural or synthetic rubber, etc., which are dissolved in a volatile organic solvent, such as xylene, and emulsified in aqueous sodium oleate. This could probably be widely applied in the plastics field. J. A. Tumbler (U.S.P. 2,289,592) prepares an automobile polish, using at one stage dispersion in soap solution. Ethylene polymers, too, can also be utilised to better advantage by dispersion in water with the aid of soap and a protective colloid, e.g., in U.S.P. 2,290,794. Other somewhat similar patents in this field are U.S.P.P. 2,284,023, 2,288,432, and B.P. 485,198.

Protein plastics, e.g., the casein group, have been made more resistant and adaptable, according to claims by Atwood in U.S.P. 2,298,269, where the protein is heated for several hours with a polyhydric alcohol or mixture of the same with a fatty acid and catalyst (to prevent hydrolysis), the final product being dispersed in aqueous soap solution to make a vehicle for paint or coating composition. See also U.S.P.P. 2,250,377, 2,250,346, 2,293,164, 2,175,797, 2,285,579, and 2,275,123; also B.P. 539,288.

Lignin Waste

Utilisation for Plastic Components

AN important objective of American plastics manufacturers at present is to find an insulating fibre which will replace phenolic fibre in order to release, for purely war-time purposes, the cresylic acid, formaldehyde, and paper which are its component parts. It is reported that the Western Electric Co.'s development of lignin fibre for telephone manufacture has already released hundreds of tons of vital materials for munitions work. This lignin plastic has been developed from the sulphite water waste of American paper and pulp mills, and Western Electric have introduced it into the manufacture of telephone parts in substitution for phenol-formaldehyde resins. Lignin paper sheets are first conditioned to secure a fixed and definite moisture-content; then, heated and subjected to high pressures, they yield a tough fibre board possessing good electrical characteristics and less corrosive than phenol fibre. The lignin board is readily punched, or cut to prescribed shapes, and, in view of the further research that is going on, it is possible that news of even fuller utilisation of lignin "waste" will be heard of before long.

The Trend of War-Time Earnings

An Analysis of Company Accounts

by S. HOWARD WITHEY, F.C.I.

MOST of the leading companies concerned in base metals and rubber have been affected by the Japanese invasion of Malaya and the Dutch East Indies, and having regard to the curtailment of activities due to the cutting off of supplies, the figures submitted by the directors of Amalgamated Metal Corporation, Ltd., must be regarded as very satisfactory. The two main constituents of this combine realised a net profit of £283,717 during the financial year to the end of March last, representing an increase of £19,353 in relation to 1941-42, and at £212,347 the net profit of the parent company showed an increase of £122. Registered in 1929, the holding company has an authorised capital of £5,600,000, of which a total of £5,335,792 has been issued and fully paid. This consists of £900,000 in the form of 6 per cent. cumulative preference £1 shares—the dividend on which is paid half-yearly—and £4,435,792 in ordinary £1 shares, upon which the dividend of 3½ per cent. has been repeated. Both the preference and the ordinary dividends are calculated at the gross amount before deducting income tax, and the forward balance of the parent company is £3094 higher, the final figures being made up in the manner indicated below:—

	£
Brought forward from 1941-42	36,026
Net profit—year ended March 31, 1943	212,347
Disposable balance	£248,373
6 per cent. dividend on £900,000 cum. pref. £1 shares, gross	54,000
3½ per cent. dividend on £4,435,792 ordinary £1 shares, gross	155,253
Carried forward to 1943-44	39,120
	£248,373

Investment holdings in subsidiary and allied companies are valued for balance-sheet purposes at £3,101,059, including shares of companies in Belgium and Germany. The current assets total £3,846,437, compared with £4,114,050 a year ago, the decline being due to a reduction in the outstanding book debts from £2,133,061 to £655,497. At the recent price of 24s. the preference shares give a return of 5 per cent., while the ordinary shares are quoted around 18s. 6d., upon which basis the yield is less than 4 per cent.

During the twelve months ended March last, the gross earnings of Metal Industries,

Ltd., amounted to £264,794, which figure compared very favourably with £179,684 for 1941-42 and £162,375 for 1940-41. This company was registered privately in 1922, and was converted into a public concern in 1935. In 1932, the oxygen business was transferred to the British Oxygen Co., Ltd., and in addition to a large interest in the latter company, Metal Industries holds nearly all the ordinary shares of Electrical Switchgear and Associated Manufacturers, 64 per cent. of the ordinary and 58 per cent. of the preference capital of the Sentinel Waggon Works, and the bulk of the capital of the Igranic Electric Company. Although the provision for taxes is £46,091 higher at £131,769, the balance of net profit is £131,425, representing an increase of £38,969, enabling the ordinary dividend to be raised from 5 per cent. to 8 per cent, and an increased balance to be carried forward to the next account. The authorised capital is £2,750,000, of which a total of £2,650,000 has been issued, comprising £500,000 in the form of 5 per cent. cumulative preference stock, £250,000 in "A" ordinary stock, and £1,900,000 in "B" ordinary stock. After placing £4609 to the buildings and plant reserve, a credit of £149,846 goes forward as against £126,283 brought in, the following being a summary of the final appropriation account:—

	£
Brought forward from 1941-42	126,283
Net profit—year ended March 31, 1943	131,425
Disposable balance	£257,708
5 per cent. dividend on £500,000 cum. preference stock, net	13,177
8 per cent. dividend on £2,150,000 ordinary stock, net	90,076
Allocated to buildings and plant res	4609
Carried forward to 1943-44	149,846
	£257,708

Although the company's holding of £924,957 British Oxygen ordinary stock is shown at £2,528,385, or less than 55s. per £1 unit, the current market price of the units is 79s., which gives the holding a value of £3,653,580. Apart from amounts owing from subsidiary companies, the current assets total £261,383, but owing to an increase in the bank overdraft the current liabilities and provisions have expanded to £766,778. At the recent price of 24s. the preference £1 units give a return of 4.16 per

cent., and compared with 26s. a year ago, the "B" ordinary £1 units are now worth about 43s., at which price the actual yield is 3½ per cent.

The gross earnings of Harben's (Viscose Silk Manufacturers), Ltd., amounted to £147,820 during the year ended April 30 last, which figure compares with £170,734 for the preceding twelve months, and having regard to the reduced output imposed by the concentration scheme of the Board of Trade, the result is fairly satisfactory. After adding £30,000 as surplus of tax reserves from previous years, and after charging £75,500 for taxation and £55,190 for depreciation and maintenance, and setting aside £15,000 for deferred repairs, the balance of net profit was £25,493, or an increase of £595. This has enabled a year's arrears of dividend on the first preference shares to be paid, and the forward balance to be raised by £7943. After deducting depreciation, the fixed assets amount to £485,826, while including tax reserve certificates and Government securities the floating assets total £442,320. During the year, £6500 of 5 per cent. debentures were repaid, the amount now outstanding being £99,000, and the called-up capital of the company is £383,800, consisting of £450,000 in 8 per cent. first preference £1 shares (recently quoted at 22s. 6d.), £10,000 in 8 per cent. second preference £1 shares, and £123,800 in ordinary shares of 4s. denomination (recently quoted around 3s.).

The extension of the war to the Far East caused a cessation of supplies of certain raw materials normally used by W. J. Bush & Co., Ltd., manufacturing chemists, distillers of essences, etc., but despite the restriction of markets the trading profit and other receipts of the company during 1942 amounted to £153,304. This was arrived at after debiting an unstated amount for E.P.T., and compares with £160,818 for 1941; after charging debenture interest, depreciation, income tax, and directors' fees, the balance of net profit was £73,676. This represents a decline of £5517 in relation to 1941, but an increase of £28,961 when compared with the 1940 figure; consequently, it has been possible to maintain the ordinary dividend of 10 per cent., while £12,426 has been added to the forward balance. The entire authorised capital of £375,000 ranks for dividends, composed of £125,000 in the form of 5 per cent. cumulative preference £5 shares, and £250,000 in ordinary £1 shares, and as the dividends are calculated at the gross amounts the final figures were made up as follows:—

Brought forward from 1941	£ 178,341
Net profit—year ended December 31, 1942	73,676

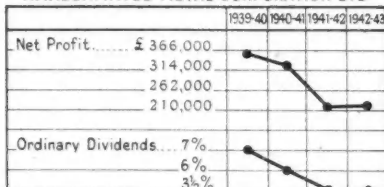
Disposable balance £252,017

5 per cent. dividend on £125,000 cum. preference £5 shares, gross	6250
10 per cent. dividend on £250,000 ordinary £1 shares, gross	25,000
Allocated to res. against freeholds	5000
Transferred to plant reserve	25,000
Carried forward to 1943	190,767

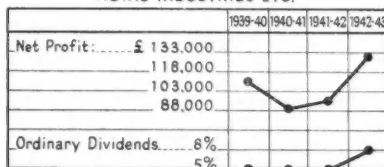
£252,017

The balance sheet shows plant and other fixed assets to the value of £309,209, and shares in, and loans and accounts with, subsidiaries at £222,326. Including cash and tax reserve certificates the current assets amount to £1,026,979, the floating surplus over the current liabilities being £490,232, compared with £464,655 at the close of the previous year. The preference shares were recently quoted at 5½ to return 4½ per cent., and at 52s. the ordinary shares give a yield of nearly 4 per cent.

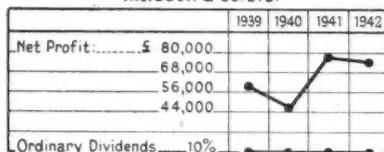
AMALGAMATED METAL CORPORATION LTD



METAL INDUSTRIES LTD.



W.J. BUSH & CO LTD.



After providing for directors' fees and taxation, and before charging debenture interest, the earnings of Calico Printers' Association, Ltd., amounted to £558,315 during the twelve months ended June 30 last, as compared with £618,016 in 1941-42. The debit under the heading of depreciation was £18,803 lower at £296,288, and as debenture interest required £128,000 the balance of net profit of £134,027. The ordinary £1 units recently declined from 17s. to 15s. 6d., but this compares with 9s. a year ago.

Test Sieves

New British Standard

THE British Standards Institution has issued a revision of B.S. 410 for Test Sieves. While no fundamental changes have been made in the series of meshes, particular attention has been paid to the question of the tolerances on the apertures, as a result of which modified tolerances on "average" and maximum apertures have been adopted which are more evenly graded throughout the series. Furthermore, an additional tolerance has been introduced called the "intermediate tolerance" and the maximum percentage of apertures that may exceed this intermediate dimension is specified.

It has been appreciated that even these revised tolerances might permit of too great a variation in sieving results to meet some special requirements such as may exist in research and control work, and the new specification includes a second series of sieves with more stringent tolerances designated "Special Test Sieves." This special series of sieves will not, however, be manufactured during the war.

The possibility of replacing medium mesh wire cloth sieves by perforated plate sieves has received attention, but up to the present it has not been found possible to complete the research work necessary to establish the required data and in the present revision wire cloth has been retained for the medium series. The manner of expressing tolerances on the apertures has, however, been brought into line with that now adopted for the fine mesh sieves. Perforated plate sieves of smaller apertures than were formerly standardised have been included in the coarse sieve series and this series has also been extended to include a selected number of larger apertures. As formerly, the revised specification provides for sieves of 8, 12, and 18 in. diameter, and, in addition particulars are now given of 3-in. diameter sieves as used for wet sieving.

An important feature of the revised specification is the comprehensive appendix relating to the method of examining the aperture widths and wire diameters of fine and medium mesh test sieves. This appendix, which has been prepared in consultation with the National Physical Laboratory, indicates the type of projection apparatus required and describes in detail the manner of carrying out the measurements and the number of apertures that have to be measured to determine whether sieves conform to the requirements of the specification. In a further appendix to the specification particulars are given for general information of other sieve series in common use. Copies of this specification may be obtained from the B.S.I., price 2s. post free.

U.S. Textile Research

Camouflage Pigments

AMONG textile chemistry abstracts recorded by the Textile Institute in the October issue of their *Journal*, the following reports of recent American work appear to be of particular interest. Mr. R. K. Jackson, in *Amer. Dyestuffs Rep.* (1943, 32, 259), suggests that camouflage netting should be coloured with infra-red reflecting pigments or dyes so that the material would not show in contrast with foliage in an aerial photograph taken on an infra-red sensitive plate. Among hints on the examination of dyes and pigments for the purpose it is pointed out that very high reflectivity can be destroyed almost completely by the addition of as little as 1 per cent. of a black pigment. The possible use of infra-red reflecting materials in seasonal fabrics, and the textile applications of pigments that fluoresce in ultra-violet light are also mentioned.

Flameproof Cellulose Sheet

According to U.S.P. 2,316,496, assigned to E.I. du Pont de Nemours & Co., regenerated cellulose sheet is converted into a flameproof, non-sticking, transparent product by passage through a bath containing 7 per cent. of ammonium sulphamate, 1.5 per cent. of glycerol and enough wax emulsion to give 0.5 per cent. of solids, followed by drying. The wax emulsion consists of carnauba wax, 22.7 parts, stearic acid, 9.7, morpholine, 11.3, bleached shellac, 18.2, mono-sulphonated alkyl-benzene, 2.3, and water, 391.

ZIRCONIUM SALT FOR TANNING

The results of semi-practical and full-scale trials with zirconyl sulphate as a tanning agent are described in the *Journal of the American Leather Chemists' Association* (1943, p. 326). It is stated that this material can be used to partly replace chromium in chrome tannage to give a combined chrome-zirconium tanned leather, affording a means of conserving chrome supplies. Thus a partially chrome tanned skin could be tanned with the zirconium salt, neutralised and finished in the usual way, or the reverse procedure could be adopted; alternatively, the chrome and zirconium tannage could be carried out simultaneously. With pickled skins it was found more satisfactory to tan first with the chrome salt, then with the zirconium salt, neutralise with sodium bicarbonate to about pH 4.25, then wash up and finish as usual. With a wide range of chrome-zirconium combinations good leather was obtained in every case, and in the zirconium retanning of chrome for suede a plumper leather with a tighter nap results.

LETTER TO THE EDITOR

British Fluorspar

SIR,—It was with interest I read the article entitled "British Fluorspar—A Mineral with a Future" by A. G. Bennett, which appeared in your issue of November 13. The article welcomes the formation of "The Derbyshire Fluorspar Producers' Association" and envisages, with the extension of the Association to include Durham and Yorkshire producers, the possibility of a central instrument which will be able to speak and act for the industry as a whole. The advantages of such a focal point for an industry heretofore so dependent upon the caprice of individual enterprise must be fully appreciated by those with knowledge of the past history of fluorspar production in this country, and Mr. Bennett is to be commended for his timely article.

The 300 per cent. war-time increase in the production of British fluorspar has thrown a searchlight on the wasteful methods employed in the past when dealing with this national asset. A recovery of only 33 to 50 per cent. of the CaF_2 contained in the raw material treated has been by no means uncommon and this, when considered in conjunction with the erratic and oftentimes poor quality of the product of these operations, would offer very slight prospects of a post-war export trade in this commodity. Reliance upon primitive jigging and washing operations will no longer suffice to treat material so friable and liable to produce uneconomic quantities of "fines," as occurs when dealing with crude fluorspar. Neither will the disposal of high-silica jig concentrates of varying CaF_2 content be so easily accomplished in a post-war competitive market where demand will be for quality.

The establishment, however, of central beneficiating plants to handle the output of small producers and the installation of modern equipment and technique in the larger producers would completely alter the picture and enable this country to become a post-war exporter of high-grade fluorspar for both the acid and metallurgical market.

Both in this country and America much painstaking research work has recently been done in evolving suitable methods for the beneficiation of fluorspar by differential gravity and flotation, and it would be unfortunate if the industry derived no benefit from, or failed to take advantage of, such recent investigations and technical advances as would ensure a better utilisation of our natural resources and the production of a guaranteed and graded product capable of holding its own in a world market. It is hoped, therefore, that the formation of the Association described by Mr. Bennett will prove the initial step towards that rational-

isation which is essential if the industry is to be placed on a firm and competitive basis capable of meeting post-war conditions.—Yours faithfully,

ANDREW PEARSON, M.Inst.M.M.

November 22, 1943.

Planning, not Control

Col. Devereux on the Coal Industry

"BECAUSE I have prepared a so-called plan it may be thought that I am a disciple of planning, but I dread and am terrified of State planning, because I know it cannot be successfully carried out without dictatorship and full control." Col. W. C. Devereux, chairman of International Alloys, Ltd., who recently published a booklet on the reconstruction of industry in Wales, made the above comment during an address last week to Cardiff Rotary Club, at which many leading South Wales industrialists were present as guests.

Col. Devereux went on to say that many turned to other creeds and would plead nationalisation as the cure. Despite what Mr. Morrison, the Home Secretary, had said, the technician, the manager, the organiser, and the industrial scientist, in the main, was very reluctant to fancy himself tied to the bureaucratic machine.

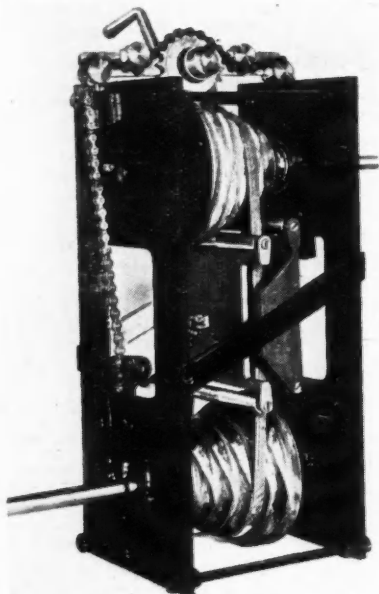
Expressing the strongest disapproval of central control on the lines advocated by the Home Secretary, Col. Devereux made a vigorous plea for the control of industry by industry in the widest sense. He remarked on the fact that, among the many comments, mostly favourable, that he had received concerning the suggestions outlined in his booklet, scarcely one had come from the coal industry.

"Not surprisingly," he continued, "the few who have commented have taken the view that the coal industry is nobody's business except that of the coal owners. I am certain that since much of the basic prosperity of South Wales, and, indeed, the whole of Great Britain, lies in coal it is no good going on without the participation of those who control coal. I do not accept the view that the coal industry is none of my business. . . . Every citizen is entitled to ask why the coal industry is the only essential war industry that is producing less in war than in peace. It is no good saying 'manpower,' because the shortage of skilled men is operative in other industries and yet many skilled industries have mastered the obstacle, to produce tenfold what they did in peace. The research that is to be carried out by the fuel people is the concern of every industrialist, and we must not allow the coal industry to get away with the idea that they and they alone must decide what their research programme shall be.

Speed-Change Power Unit

Without Gear Wheels

FOR driving a wide range of equipment including, in the chemical industries for example, machines for feeding powders or other granular material at different rates, it is customary to use some type of multi-speed gear box. As this has certain inherent disadvantages when used in various processes, interest attaches to a new invention, the "N and B" Speed Change Power Unit, now placed on the market by the Newey Engineering Co., Ltd., Brook Street, Nottingham. This is in the form of a small and compact casing, replacing the gear box, intended in one standard form for power transmission within the range of 1 to 2 H.P., while allowing of six different speeds, which are changed over from one to the other, up



"N & B" speed-change power unit.

or down, as required, almost instantaneously, merely by operating a handle without stopping the machine. Other sizes are available up to 7 H.P., while the number of speed changes can be more or less than six, as required.

This new invention consists basically of two sets of step pulleys, each formed in one piece with the required number of grooves or steps, operated by a short "V" belt, which can be moved as required—merely by

operating a handle—to vary the speed, without having to touch the belt by hand or stop the machine. This is accomplished by making both the driving and driven step pulleys with transverse interconnecting grooves. Consequently, when the "V" belt is pushed sideways in either direction it slides smoothly through the lateral grooves from one set of step pulleys or straight driving grooves to the other, thus changing the speed immediately without interrupting the running.

Tartrate Recovery

Process for Utilising Winestone

AN article in *Chemical Industries* (1943, 53, p. 336) describes a convenient process for recovering tartrates from the deposits which encrust the insides of wine casks and storage tanks. These deposits, known in the trade as winestone, consist mainly of crystalline acid potassium tartrate which is difficult to remove by purely mechanical means. An American chemist, Mr. Ralph Celmar, has been able to develop a simple chemical procedure whereby winestone can be readily made available, to augment the none-too-abundant supplies of tartrates.

The process consists of filling the cask or vat with a 0.5 per cent. solution of sodium hydroxide at a temperature above 38°C. Several casks or tanks can be treated with the same solution by adding further hydroxide to keep the solution up to 0.5 per cent. In one instance a solution at 49°C. and 0.5 per cent. removed winestone from a 7000 gallon tank in four hours. Ordinarily, it is estimated, it would have taken about four days to do the same job by scraping and chipping. After the solution is used to dissolve the coating in several tanks the tartrates are recovered by lowering the pH of the solution to between 3 and 4 with hydrochloric acid. The crude potassium acid tartrate rapidly precipitates as the solution cools. In twenty-four hours the supernatant liquid can be pumped off the crystals into another tank for subsequent treatment to precipitate the remaining tartrates as calcium tartrate by the addition of calcium chloride. The crude potassium acid tartrates are agitated with water to wash the crystals and can be collected in a filter press for dewatering and drying. The calcium tartrate crystals from the residual solution are collected, washed and dried in a similar manner. This semi-crude material is then dispatched to a chemical manufacturer for conversion into tartaric acid and various other tartrates.

Owing to the cutting off of supplies of cassava from Java, Brazil is now supplying the United States with mandioca starch.

Personal Notes

MR. JOSEPH LLOYD, F.I.C., manager of the rubber-proofing department of J. Mandleberg & Co., Ltd., Salford, receives the M.B.E. for his services to various Government departments.

MR. J. BENSTEAD, General Secretary of the National Union of Railwaymen, and MR. E. THORNTON, Secretary of the United Textile Factory Workers' Association, have been appointed members of the Advisory Council to the Committee of the Privy Council for Scientific and Industrial Research.

We learn that MR. C. J. GOODWIN, M.Inst.C.E., M.I.Chem.E., F.Inst.F., has now returned fully to his consulting practice after making available his specialised knowledge as a Government official. The Research Laboratories under DR. G. N. WHITE, D.Sc., F.I.C., had to be moved in 1941 to Epsom from 7 Idol Lane, E.C.3, but the latter is still the office for correspondence.

MR. J. CROMBIE, of James Anderson & Co. (Colours), Ltd., was again elected chairman of the British Colour Makers' Association at their annual meeting on November 19. MR. J. B. DUNN, of Champion, Druce & Co., Ltd., was elected vice-chairman in place of Mr. H. G. Ferguson, of the Cornbrook Chemical Co., Ltd., who, though nominated, found himself unable to stand for office.

DR. C. J. T. CRONSHAW and MR. D. R. LAWSON have been appointed directors of Imperial Chemical Industries, Ltd. Dr. Cronshaw entered the firm of Levinstein, Ltd., as a chemist in 1915 and in 1916 took over the Ellesmere Port Indigo Works, a German firm which had been liquidated on the outbreak of the last war. Later, he spent some time in Cologne as Chemical Controller of the British-occupied area of Germany. In 1921, he became manager of the Blackley works of the British Dyestuffs Corporation and in 1931, when the corporation was absorbed into the Dyestuffs group of Imperial Chemical Industries, he was appointed managing director and in 1939 chairman. Mr. Lawson became associated with Brunner, Mond, Ltd., as a research chemist in 1920 and in 1926 was appointed manager of the ammonia soda plant. When the I.C.I. group system was formed he became chairman of I.C.I. (Lime), Ltd., Buxton, and was appointed chairman of I.C.I. (Alkali), Ltd., in 1939.

Obituary

MR. SYDNEY WALTON, who died at Cheadle, Cheshire, on November 18, aged 49, was chairman of the Association of Piece Dyers.

MR. CECIL RICHARDSON, secretary of Fredk. Braby & Co., Ltd., the galvanised steel manufacturers, died on November 15 at the age of 63. Mr. Richardson joined the firm in 1898, and was appointed secretary in 1917. He had been a member of the Board since October, 1928.

The death is reported of DR. ELMER OTTO KRAEMER, the American colloid chemist, on September 7 at the age of 45. Since 1939 he had been head of the physical chemistry division of the Biochemical Research Foundation of the Franklin Institute, Newark, Del. He had spent two periods working in Svedberg's laboratory at Upsala, and had also studied under Freundlich at the Kaiser Wilhelm Institute, Dahlem. From 1927 to 1938 he was engaged on fundamental research for the du Pont Company.

A LACQUER FROM STARCH

Two research workers of the U.S. Department of Agriculture, Dr. Smith and Dr. Tredway, have developed a new product which is described as an acetate of starch. It can be prepared by either of two processes. In the first, potato starch is treated directly with acetic acid, in the presence of a strong acid like sulphuric which acts as a catalyst. In the other, the starch grains are put through a pre-swelling stage in formic acid, and the acetic acid is added afterwards. The second process is much the quicker, requiring only an hour's cooking at a temperature just below the boiling point of the mixture, as compared with the nine hours required when unmodified starch is used. The new compound is considered too brittle for use as a plastic or for wrapping films, but it appears to be suitable for producing lacquers applicable to wood, paper, and other fibrous material.

MONTAN WAX SUBSTITUTE

Owing to the shortage of certain waxes, the New Zealand Government has requested the Imperial Institute to carry out further tests on the wax obtained from the Chatham Islands peat deposits. A favourable report on this wax as a substitute for montan wax had already been made in 1927, but no commercial development was undertaken. A new report, made in collaboration with Mr. Leo Ivanovsky, has just been issued (*Bull. Imp. Inst.*, 1943, 41, 3, p. 157), in which it is stated that the peat wax, in its present condition, would be worth about 80-85 per cent. of the value of montan wax, and could replace it for some purposes (e.g., boot polish); improvement might be effected if the undesirable "asphaltic" constituents were to be removed.

General News

The temporary increases in workmen's compensation are set out in the new act (6 and 7 Geo. 6, chapter 49), now published by the Stationery Office, price 1d.

Four prisoners of war in Germany have passed this year's written examinations in paints, pigments and varnishes of the City and Guilds of London Institute.

The Factory Department of the Home Office has published an outline of the precautions necessary in the installation and working of abrasive wheels in Form 264 (H.M.S.O., price 1d.).

At a meeting of the Hull Corporation Development Committee, the Town Clerk (Mr. A. Pickard) reported that among the numerous inquiries being made in the city for sites for post-war industries was one for twenty acres for a factory making certain products for the paint and plastics industries. Other inquiries from branches of the chemical industry had also been made during the past few days.

During October residents and workers in the County of London gave £39,401 in pennies to the Red Cross Penny-a-Week Fund. Of this amount £24,726 was contributed by workers in over 10,000 firms and organisations, while £14,675 came from weekly house-to-house collections. Londoners have now raised £926,110 for the fund. Outside London, the biggest October contribution was Manchester's £9413, bringing the city's total to £159,259.

The Plastics Group of the Society of Chemical Industry has just published Vol. III of its *Proceedings*. This slim volume, priced at 7s. to members of the Group and at 50s. to others, comprises a dozen reprints from the *Journal of the S.C.I.* (1941-42) and from *Chemistry and Industry* (1942-43), including a record of the Group's first ten years. The contents of the volume are of the highest importance to all interested in the progress of the plastics branch of the chemical industry.

Favouritism towards Oxford and Cambridge universities in the award of D.S.I.R. research fellowships and grants was alleged last week by Sir Ernest Simon, chairman of Manchester University's Court of Governors. He said that a large proportion of the 100 research fellowships given each year went to the senior universities in spite of the wealth of their constituent colleges. Post-war development of the universities would make it necessary, he added, that there should be a national planning body to see that grants made for capital expansion should secure the maximum national advantage.

From Week to Week

The crystal-clear plastic, Lucite, which is used for the noses and gun turrets of combat planes, has proved a satisfactory substitute for glass in divers' helmets at depths over 300 feet. Before long it is expected that entire helmets will be made of this light and virtually unbreakable plastic, which will increase the diver's range of vision.

The British Legion is anxious that before schemes are initiated for training and rehabilitating disabled ex-service men and women in industry, the trades concerned should be fully consulted, especially on the question of how many a particular trade could absorb. This statement of policy was made by the general secretary of the Legion, Mr. J. R. Griffin, at a Press conference last week.

Foreign News

The American Chemical Society's membership has increased this year by over 5000 members and now stands at 35,649.

The molybdenum mine at Knaben, Southern Norway, and the pithead buildings, were severely damaged last week in the attack by Flying Fortresses and Liberators.

Fluorspar deposits in Crittenden and Livingston Counties, Kentucky, have been examined and the result of the studies has been published by the U.S. Department of the Interior. Past production in this area is conservatively estimated at 125,000 tons.

As quinine imports from former sources have ceased, a home quinine manufacturing industry has been set up in Brazil after acclimatising an increasing number of true cinchona trees to ensure a yearly supply of 300 tons of quinine bark.

The Economic Committee of the Hungarian Government has recommended the setting up of an experimental cellulose industry based on maize straw and reeds. These materials are now being tested for their suitability in paper manufacture.

To produce synthetic rubber in Rumania, a new company with a capital of 5,000,000 lei has been formed. A process developed at the Petrolina refinery will be used, and the Government will receive 10 per cent. of the net profits.

An account of penicillin preparation, one of the most complete yet published, has appeared in *Canadian Chemistry and Process Industries* (1943, 27, 9, p. 529). Written by Mr. C. C. Lucas, of the Banting and Best Department of Medical Research, Toronto University, it concludes with an interesting outline of the work done in that institution: 27 references are included.

German chemical-manufacturing centres formed the chief target for bombers of the R.A.F. on three successive nights last week. Ludwigshafen was heavily attacked on Wednesday and Thursday nights, and Leverkusen, near Cologne, with the large Bayer plant, was bombed on Friday.

The War Production Board, Washington, reports that copper supplies and consumption in the United States now approximately balance, and points to a similar situation in Canada, although the industries have reached the highest intensity of war production.

A new Yugoslav concern, the Chemopharma Company, has been formed in Belgrade with a share capital of 1,500,000 dinars. Representing the German chemical-pharmaceutical interests, it aims at establishing enterprise for the manufacture of cosmetics, pharmaceuticals and disinfectants.

During the June quarter of 1943 imports into Peru included (value in thousand soles): chemical and pharmaceutical products, 12,336 (last year 9002); barks, colours and non-edible oils, 9225 (6322). Among exports, petroleum derivatives were valued at 28,612 (24,906); mineral concentrates at 6721 (7885); and rotenone at 605 (605).

Projects for new chemical factories in Spain include a plant at Zaragoza to turn out 10,000 kg. daily of organic and mixed nitrogenous fertilisers (Argón, S.L.); and another at Barcelona (Cros, S.A.) for 2000 kg. daily of trisodium phosphate dodecahydrate. Sanction is also being sought for smaller plants to produce synthetic carnauba wax (at Madrid) and saccharin (at Barcelona).

To prevent inflation of domestic prices of lead in Spain the Government has organised a special department within the Vertical Syndicate of Metals. Lead prices in Spain stand at such a low level that mining would be unprofitable but for the high prices obtained for exported lead. The new department known as the Special Service for Lead, will stimulate production by distributing the profits from foreign sales among mines, smelters and refineries.

The American Society of European Chemists and Pharmacists (A.S.E.C.) has been founded in New York (302 West 91st Street). Among its purposes are the advancement of the science of chemistry and pharmacology; advice and assistance to members in professional problems; the furthering, by study, research, publications and teaching, of chemistry and pharmacology; the study of relief and rehabilitation in the field of science and scientific endeavour; and the promotion of naturalisation and Americanisation among persons of foreign birth. The society publishes a monthly bulletin.

Pyrethrum and rotenone, two of the most important insecticides, have been placed under Government control in Canada. They will be released, with the permission of the Administrators of Fertilisers and Pesticides, for the following priority purposes: to maintain the health of the armed forces and the civilian population, for experimentation, and for agricultural and industrial uses.

Principal chemical exports from Spain in the first six months of 1943 are reported as follows: essential oils, 402,185 kg., valued at 30,575,120 pesetas (of which 201,973 kg., valued at 9,070,836 pesetas, were eucalyptus oil), tartar products (including tartaric acid, cream of tartar, crude tartar, and wine-lees), 1,724,600 kg. (17,291,383 pesetas); calcium chloride, 220,000 kg. (131,250 pesetas); and potassium chloride, 43,540 kg. (17,296,219 pesetas).

Forthcoming Events

At the meeting of the **Textile Institute** (Midlands section) at the College of Art and Technology, Leicester, on **November 27**, at 3 p.m., a joint lecture by Dr. C. M. Blow, A.I.C., and Mr. W. Knight, A.I.R.I., on "Textile Fibres and Rubber as Associated Materials for Manufacture," will be delivered.

The Leeds Area Section of the **Royal Institute of Chemistry** holds its annual general meeting at the University on **November 29**, at 6.30 p.m. The president, Professor Alexander Findlay, will attend.

The annual general meeting of the **Electrodepositors' Technical Society**, to be held at the Northampton Polytechnic, St. John Street Clerkenwell, E.C.1, on **November 29**, at 5.30 p.m., will be followed by a "Brains Trust" session, with the president acting as question master. Members are invited to send questions on any aspect of electrodeposition to the hon. secretary.

"Nutrition of the Public and Food Legislation" will be the subject of a joint meeting the **Society of Public Analysts** and the Food Group of the **Society of Chemical Industry** on **December 1**. The meeting will start at 2.30 p.m., and a general discussion will follow papers by Professor J. C. Drummond, Dr. H. E. Cox and Dr. E. B. Hughes.

Mr. C. L. Haddon will present a paper on "Gypsum Plaster Products" at the meeting of the Road and Building Materials group of the **Society of Chemical Industry**, to be held on **December 2**, at 4 p.m., at Grosvenor Place, London, S.W.1.

A lecture on "Some Properties and Reactions of Anhydrous Hydrofluoric Acid" will be given by Dr. H. J. Emeléus at the joint meeting of the **Chemical Society** and the

University Physical and Chemical Society, to be held at 4 p.m. on **December 2**, in the chemistry lecture theatre of University College, Nottingham.

At the joint meeting of the Bristol Section of the Chemical Engineering Group of the **S.C.I.** and the **Institution of Chemical Engineers**, which takes place on **December 2**, at 5.30 p.m., in the chemical department of Bristol University, Woodland Road, Bristol, a paper will be presented by Mr. P. Hamer, A.I.C., and Mr. E. W. Colbeck on "Caustic Embrittlement in Boilers."

"Some Aspects of the Formation of Ring Compounds" will be the subject of a lecture by Professor G. M. Bennett to the **Chemical Society** meeting on **December 3**, at 7.15 p.m., at the Royal Technical College, Glasgow.

The London section of the **Society of Chemical Industry** meets on **December 6**, at 2.30 p.m., in the rooms of the Chemical Society, Piccadilly, to hear two papers dealing with interesting aspects of glass technology. Professor W. E. S. Turner will lecture on "Glass for Use in the Chemical Industry," and Mr. I. C. P. Smith, A.I.C., on "Sintered Glassware: Manufacture and Use."

The next meeting of the Midland section of the **Electrodepositors' Technical Society**, will take place at the James Watt Memorial Institute, Birmingham, on **December 7**, at 5 p.m., when Mr. L. Wright, B.Sc., will present a paper on "The Return of Zinc Plating."

An address on "The Production and Use of Open-cast Coal" will be given by Major-General K. C. Appleyard, C.B.E., technical advisor to the Ministry of Fuel and Power, at the meeting of the **Institute of Fuel**, to be held at 2.30 p.m., on **December 8**, in the Connaught Rooms, Great Queen Street, London, W.C.2.

Professor H. W. Florey will give a lecture on the development of penicillin for medical uses at the **Royal Institution**, on **December 10**, at 5 p.m.

The Manchester sections of the **Oil and Colour Chemists' Association** and the **Society of Chemical Industry** are holding a joint meeting at the Grand Hotel, Manchester, on **December 10**, at 2.30 p.m., when Dr. V. G. Jolly will lecture on "The Progress of Paints and Painting."

The graduates' and students' section of the **Institution of Chemical Engineers** will hold a meeting at Caxton Hall, Westminster, on **December 10**, at 6 p.m. Papers will be presented by Mr. J. F. Pillow and Mr. L. L. Gush, dealing respectively with "High-Pressure Steam Boilers" and "Theories of Evaporation Rates in Still Air" respectively.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for errors that may occur.

Mortgages and Charges

(Note.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every company shall, in making its Annual Summary, specify the total amount of debt due from the company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.)

EVANS RESIDUES, LTD., Boreham Wood, manufacturing chemists (M., 27/11/43).—November 6. £2,500 debentures to Evans Chemicals, Ltd.; general charge.

LANCASHIRE CHEMICAL WORKS, LTD., Manchester (M., 27/11/43).—November 8, debenture to Barclays Bank, Ltd., securing all moneys due or to become due to the Bank; general charge. *Nil. September 3, 1943.

Company News

Imperial Smelting Corporation are paying a dividend of 4 per cent. (same) on the ordinary shares for the year ended June 30.

Steaua Romana (British), Ltd., report a net profit of £5271 (£3762) for the year ended June 30.

British Plaster Board, Ltd., have declared an interim dividend of 10 per cent. (same), payable on January 6.

Cheshire United Salt, Ltd., announce a net profit, for the year ended June 30, of £3152 (£3333), and are paying a 5 per cent. preference dividend (same).

Lawes Chemical Co., Ltd., record a net profit of £14,241 (£11,502) for the year to June 30. Forward, £2554 (£2057); dividend unchanged, as already reported.

Genatosan, Ltd., are paying a final ordinary dividend of 15 per cent., making 25 per cent. (same) for the year. Trading profit is £113,271 (£130,474); forward, £18,519 (£14,013).

Allen & Hanburys, Ltd., announce a profit, for the year ended June 30, of £266,860 (£214,292), and a final ordinary dividend of 10 per cent., making 15 per cent. (same). Total trading for the year is a record, in spite of export restrictions.

The Electrolytic Zinc Co. of Australasia, Ltd., announces a net profit of £292,765 (£303,916) for the year ended June 30. Final dividends on preference and ordinary shares are 5 per cent., making 9 per cent. (same).

New Companies Registered

Laboratory Facilities, Ltd. (383,558).—Private company. Capital: £1000 in 1000 shares of £1 each. Manufacturers of and wholesale or retail dealers in chemical preparations, analytical and research chemists, etc. Directors: H. Holmes and Mrs. Ethel Holmes, both of 192 Windsor Lane, Burnham, Bucks.

Alma Plating Works, Ltd. (383,658).—Private company. Capital: £100 in 100 shares of £1 each. Electro, chromium, cadmium, nickel, copper, metal and barrel platers, electrical, mechanical and general engineers, etc. Directors: C. R. Dahman and Judith Dahman. Registered office: 5-7 Broadway Mews, Green Lanes, N.13.

Leather Auxiliaries, Ltd. (383,644).—Private company. Capital: £1000 in 1000 shares of £1 each. Dealers in and manufacturers of chemicals, manufactured, semi-manufactured and raw materials, dyes, gums, waxes, by-products, etc. Subscribers: H. W. Fisher; N. Haskell. Registered office: 1-3 Great St. Thomas Apostle, E.C.4.

Tomack Laboratories, Ltd. (383,896).—Private company. Capital: £1000 in 1000 shares of £1 each. Manufacturers of and dealers in chemical, pharmaceutical, biological, medicinal and industrial products and preparations, etc. Subscribers: Eileen R. Pinnell; Margery E. Manley. Registered office: 22 Charing Cross Road, W.C.2.

Carbomel Processes, Ltd. (22,594).—Private company registered in Edinburgh. Capital: £3000 in 3000 shares of £1 each. Consultants and advisers in respect of all technical and engineering processes, mechanical, chemical, etc. Subscribers: W. Whyte; J. M. MacCormick. Registered office: 121 Bath Street, Glasgow.

British Lime Corporation, Ltd. (383,810).—Private company. Capital: £5000 in 5000 shares of £1 each. To acquire the business of agricultural lime manufacturers carried on by John Toole, Ltd., at Bradley, Bilston, Staffs. Directors: J. Toole; W. G. Toole; J. Toole, jr.; L. Bate; J. Lane; J. Baker. Registered office: Regent Works, Bradley, Bilston, Staffs.

C. H. Ores & Processing, Ltd. (383,501).—Private company. Capital: £1000 in 1000 shares of £1 each. Importers, exporters and processors of ores, manufacturers of and dealers in chemical, metallurgical and industrial preparations, etc. Directors: C. Hirschler; E. A. Knight. Registered office: 24 Grosvenor Gardens, S.W.1.

Coal Treatment, Ltd. (383,683).—Private company. Capital: £100 in 100 shares of £1 each. Manufacturers and contractors for and dealers in furnaces, ovens and plant involving the treatment or utilisation of coal and its by-products, cements, fireclay, etc. Sub-

scribers: J. C. Stewart, Ruthven; J. W. Knighting. Solicitors: Garforth, Drury & Knighting, Newcastle-on-Tyne.

Campbell Norris and Company, Ltd. (383,635).—Private company. Capital: £10,000 in 20,000 ordinary shares of 2s. each and 8000 cumulative redeemable preference shares of £1 each. Manufacturing, analytical, pharmaceutical, organic, biological and industrial chemists, manufacturers of and dealers in electrical, chemical and scientific instruments, etc. Directors: A. Campbell; Laura P. Norris. Registered office: 214 Great Portland Street, W.1.

Chemical and Allied Stocks and Shares

ALTHOUGH the better tendency in Stock Exchange markets which developed last week was not maintained in the absence of improvement in the volume of business, numerous industrial shares showed gains on balance. Sentiment was, however, affected to some extent by a disposition to await war news from the Russian and Italian fronts.

In accordance with the tendency prevailing at the time of writing, shares of companies connected with the chemical and kindred industries have become less active. Nevertheless, in numerous instances, prices showed improvement on balance. Imperial Chemical were 38s. compared with 37s. 6d. a week ago. Pending the forthcoming interim dividend, which is expected to be maintained, the units of the Distillers Co. rallied from 86s. 3d. to 87s. 3d. Moreover, in the case of Turner & Newall, whose financial results are due shortly, the price moved up from 74s. 3d. to 75s. 6d. Elsewhere, Triplex Glass rallied from 36s. 9d. to 37s. 6d., British Oxygen from 75s. to 76s. 3d., and British Aluminium from 46s. 3d. to 47s. 3d. Borax Consolidated rallied from 35s. 6d. to 36s., and Dunlop Rubber from 37s. 6d. to 39s. 3d. while United Molasses at 31s. were little changed on balance. Imperial Smelting were lowered to 14s. "ex" the dividend. W. J. Bush have been maintained at 60s., and B. Laporte at 78s. 9d.

Contrary to the general tendency, Lever & Unilever have eased to 35s. 3d. at the time of writing; Lever N.V. remain at 33s. 9d. There was a reaction to 161s. 10½d. in De La Rue. Among shares of various other companies connected with plastics, Erinoid 5s. ordinary were 10s. 6d., and British Industrial 2s. shares 6s. 9d. Lewis Berger remained around 93s. 6d., awaiting the impending dividend announcement. British Celanese showed small fluctuations, but at 28s. were unchanged on balance. Courtaulds were 51s. compared with 50s. a month ago, and Bradford Dyers improved

9d. to 20s. 9d. In other directions, Monsanto Chemicals $5\frac{1}{2}$ per cent. preference remained at 23s. 6d., and British Drug Houses ordinary at 24s. Dealings around 7s. 3d. were shown in Leeds Fireclay ordinary, and at 9s. 14d. in Blythe Colour 4s. ordinary. Greeff-Chemicals 5s. ordinary were 7s. 3d., and William Blythe 3s. shares 8s. 9d.; but as in other directions, owing to inactive markets, quotations did not appear to be tested by many dealings. Fisons ordinary transferred at 47s. 6d. at one time. Goodlass Wall 10s. ordinary strengthened to 16s. Lawes Chemical 10s. shares were 13s.

There were a fair number of gains in the iron and steel section, although best prices were not fully maintained. At the time of writing, Dorman Long have rallied from 27s. 3d. to 28s. 3d., Babcock & Wilcox from 47s. 6d. to 48s. 6d., and United Steel from 25s. to 25s. 3d. Elsewhere, Staveley were better at 51s. 9d., but Stewarts & Lloyds eased to 50s. 3d., and Tube Investments to 90s. In other directions, there was a rally from 60s. to 62s. 3d. in Associated Cement, while British Plaster Board strengthened to 28s., although "ex" the interim dividend. A small rise to 41s. 6d. was shown in Boots Drug, while Sangers remained at 23s. 6d., and Timothy Whites at 32s. 9d. Beechams deferred were higher at 17s. A further improvement from 36s. 3d. to 39s. was recorded in Wall Paper Manufacturers deferred units. Barry & Staines moved up from 41s. 6d. to 42s. 3d., and Nairn & Greenwich were 65s. Following their recent decline, Murex ordinary rallied from 92s. 6d. to 95s., and General Refractories ordinary from 15s. 6d. to 16s. 6d. A rise from 86s. 3d. to 87s. 6d. was shown in Metal Box ordinary. Gas Light & Coke ordinary were 18s. 9d., and Low Temperature Carbonisation 2s. ordinary eased to 2s. 7 $\frac{1}{2}$ d.

Shell and other leading oil shares failed to keep best prices touched, but showed moderate gains as compared with a week ago.

British Chemical Prices

Market Reports

A FIRM undertone prevails in the London industrial chemicals market, and quotations remain steady with no important alterations to record. The general movement is satisfactory, with contract deliveries to the chief consuming industries covering good volumes. Fresh buying has been on a moderate scale and a fairly active inquiry is reported on export account. In the soda products section bichromate of soda, caustic soda and Glauber salt are in good call and among the potash products offers are scarce. Acetic acid and oxalic acid are active items, while a steady trade is being put through for arsenic, formaldehyde, and

the lead oxides. Activity in the coal-tar products market has been fully sustained, with buyers calling for prompt delivery under existing commitments.

MANCHESTER.—There has been a moderate flow of new inquiries on the Manchester chemical market during the past week and new replacement buying covering a fairly wide range of materials, including the alkalis, ammonia and soda compounds, and the acids, has been reported. A satisfactory feature is that, on the whole, contract deliveries to leading users are being maintained at a reasonably steady rate. The general undertone remains strong, with values stable and little changed. In the tar products also general firmness is reported and both light and heavy materials are moving into consumption in good quantities.

GLASGOW.—In the Scottish heavy chemical trade there has been a steady demand during the past week for home business. Export trade is still rather limited. Prices remain very firm at present levels.

TELEVISION IN COLOUR

To judge from information recently published in the London press, colour television will be realised soon after the war, thanks to the experiments perfected by John Baird. According to *The Times*, there is no doubt that a day will soon come when every home will have a colour-television apparatus, which will be produced at a reasonable price within everyone's reach. It is further stated that advances made during the war, e.g., in radiolocation, have contributed to the perfection of television. It appears that an apparatus has actually been constructed which gives perfect colour reproduction.

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as an indication that they are necessarily available for export.

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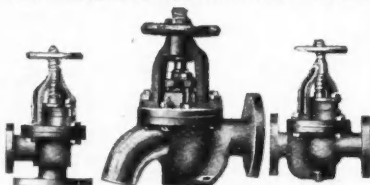
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HORIZONTAL belt driven Wet VACUUM PUMP, by Koch Bauntle-mann; cylinder 13 in. dia. by 15 in. stroke; arranged with rubber disc valves; driven by f. & l. pulleys 42 in. dia. by 7 in. face.

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Horizontal double acting steam driven Wet VACUUM PUMP, by Worthington Simpson; Maker's No. 240891; 6 in. by 10 in. by 12 in. stroke; vacuum connections 5 in. and 4 in.; steam connections 1½ in. and 1½ in.

Horizontal steam driven Wet VACUUM PUMP, by Worthington Simpson; 6 in. by 6 in. by 12 in.; vacuum connections 2½ in. and 2½ in.; steam connections 1 in. and 1½ in.

Centrifugal ACID PUMP, by Tangye, Tangye type; bronze outer casing and impeller; 4 in. connections; driven through f. & l. pulleys; mounted on cast iron bedplate.

Porcelain lined Centrifugal ACID PUMP; 3 in. connections; driven by f. & l. pulleys; mounted on cast iron baseplate.

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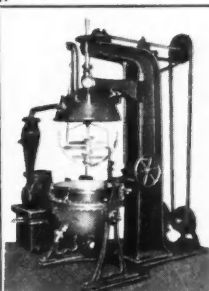
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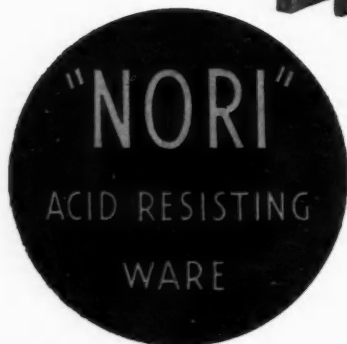
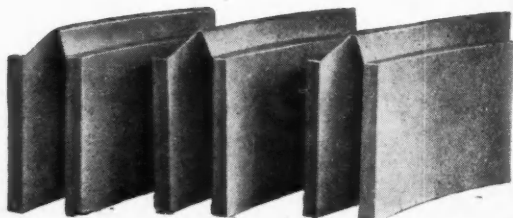
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